Targeted Multi-Family Toilet Replacement Program

Department of Water Resources 2003 Urban Water Conservation Program Grant Proposal

By
Contra Costa Water District
1331 Concord Avenue
P.O. Box H2O
Concord, CA 94524

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Table of Contents

Application Part A — Project Description, Organizational, Financial and Legal Information

A-1 Urban Water Conservation Grant Application Cover Sheet

1. Applicant (Organization or affiliation): **Contra Costa Water District**
2. Project Title: **Targeted Multi-Family Toilet Replacement Program**

3. Person authorized to sign and submit proposal:

Name, Title	**Walter J. Bishop, General Manager**
Mailing address	**P.O. Box H2O; Concord, CA 94524**
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4. Contact person (if different):

Name, Title	**Chris Dundon** **Water Conservation Coordinator**
Mailing address	**P.O. Box H2O; Concord, CA 94524**
Telephone	**(925) 688-8136**
Fax	**(925) 688-8122**
E-mail	**cdundon@ccwater.com**

5. Funds requested (dollar amount): **$203,670 (50% cost share)**
6. Applicant funds pledged (local cost share) (dollar amount): **$203,670 (50% cost share)**
7. Total project costs (dollar amount): **$407,340 (FY04, FY05, FY06)**

8. Estimated net water savings (acre-feet/year): **169.2**
   Estimated total amount of water to be saved (acre-feet): **3384**
   Over ____ years **20**

   Benefit/cost ratio of project for applicant: **1.3**
   Estimated $/acre-feet of water to be saved: **$120**

9. Project life (month/year to month/year): **7/03 – 6/06**
10. State Assembly District where the project is to be conducted: **11th and 15th**
11. State Senate District where the project is to be conducted: **7th**
12. Congressional District(s) where the project is to be conducted: **7th and 10th**
13. County where the project is to be conducted: **Contra Costa**
14. Do the actions in this application involve physical changes in land use, or potential future changes in land use?
    (a) Yes _____
    (b) No **X**

A-2 Application Signature Page

By signing below, the official declares the following:

The truthfulness of all representations in the application;

The individual signing the form is authorized to submit the application on behalf of the applicant;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the application on behalf of the applicant; and

The applicant will comply with all terms and conditions identified in this Application Package if selected for funding.

_____	_____	_____
Signature	Walter J. Bishop General Manager	Date

A-3 Application Checklist

Complete this checklist to confirm all sections of this application package have been completed.

Part A: Project Description, Organizational, Financial and Legal Information

X	A-1	Urban Water Conservation Grant Application Cover Sheet
X	A-2	Application Signature Page
X	A-3	Application Checklist
X	A-4	Description of project
X	A-5	Maps
X	A-6	Statement of work, schedule
X	A-7	Monitoring and evaluation
X	A-8	Qualification of applicant and cooperators
X	A-9	Innovation
X	A-10	Agency authority
n/a	A-11	Operation and maintenance (O&M)

Part B: Engineering and Hydrologic Feasibility (construction projects only)

n/a	B-1	Certification statement
n/a	B-2	Project reports and previous studies
n/a	B-3	Preliminary project plans and specifications
n/a	B-4	Construction inspection plan

Part C: Plan for Environmental Documentation and Permitting

X	C-1	CEQA/NEPA
X	C-2	Permits, easements, licenses, acquisitions, and certifications
X	C-3	Local land use plans
X	C-4	State and local statutes and regulations

Part D: Need for Project and Community Involvement

X	D-1	Need for project
X	D-2	Community involvement, support, opposition

Part E: Water Use Efficiency Improvements and Other Benefits

X	E-1	Water use efficiency improvements
X	E-2	Other project benefits

Part F: Economic Justification, Benefits to Costs Analysis

X	F-1	Net water savings
X	F-2	Project budget and budget justification
X	F-3	Economic efficiency
X		Benefit/Cost Analysis Tables 1; 2; 3; 4a, 4b, 4c, 4d; and 5

Attachments

X	Resumes
X	CCWD Board Resolution No. 01-07
X	Letters in support of the Program

A-4 Description of Project

The Contra Costa Water District (CCWD) is proposing to implement a cost effective, sustainable water conservation program. The goal of the **Targeted Multi-Family Toilet Replacement Program** is to achieve the installation of 4,500 ULFTs (1,500 per year over 3 years) in multi-family residences throughout the entire CCWD service area. Marketing of the program is designed to reach sites with older, non-conserving toilets (pre-1992 construction) in order to maximize the potential savings. The program is conducted as a distribution program (see Part A-6) and installations are tracked to assure compliance and evaluate savings (see Part A-7).

An estimated 3384 acre-feet of treated water will be saved over the 20-year life of the toilets. Because of the program's targeted marketing, and because the program specifies high quality fixtures (see Part A-9), the savings are highly sustainable. These savings result in direct economic benefits to the District, its municipal customers, and the program participants. Non-quantifiable benefits accrue to the residents of the multi-family units as well as the Delta water supply source. The program has a positive benefit/cost ratio based on quantified economic benefits (see Part F-3).

The Targeted Multi-Family Toilet Replacement Program will support the conservation component of CCWD's Future Water Supply program implementation. The program is consistent with CCWD's goals to implement the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) Best Management Practices (BMPs).

The program has a significant ability to support CALFED objectives for ecosystem restoration, water quality, and water supply reliability as the District's existing and future sources of supply involve diversion from the Delta. This program directly addresses two key CALFED program elements. The water management program element expressly identifies conservation as one of its goals. The water use efficiency program element stresses "real water" conservation and the ability to increase instream flows for ecosystem health. Generating savings from existing customers satisfies the "real water" test, and the corresponding reduction in Delta diversion on a year-round basis preserves in-stream flows during critical periods.

A-5 Maps

The program will be conducted throughout the CCWD service area. Figure A-1 (attached under filename ES000648-2.pdf) shows the Contra Costa Water District service area, which includes the cities of Clayton, Concord, Pacheco, Port Costa, Clyde, Pittsburg, Antioch, Bay Point and portions of the cities of Martinez, Pleasant Hill, and Walnut Creek. The backbone of the District is the 48-mile Contra Costa Canal, which transports water from CCWD's two intakes in the Sacramento-San Joaquin Delta to its treatment plants and raw water customers. The canal starts at the eastern edge of the county and stretches west, eventually ending in Martinez.

In Antioch, the canal connects with the Los Vaqueros project facilities, which consist of a 100,000 acre-foot reservoir, 20 miles of pipeline, and two pumping stations. The District treats its water at the Ralph D. Bollman Water Treatment Plant in Concord and delivers it

to about 230,000 residents in the central county area (treated water service area). The District also shares ownership of the Randall-Bold Treatment Plant in Oakley with the Diablo Water District.

The District sells untreated water from the canal to the cities of Antioch, Martinez, and Pittsburg, the California Cities Water Company in Bay Point, and the Diablo Water District in Oakley (raw water service area). These five municipal customers treat the water and distribute it to about 220,000 residents within their communities.

A-6 Statement of Work, Schedule

The project is designed as a distribution program, whereby customers are offered free, high quality, ultra-low flush toilets (ULFTs) to replace all older toilets in multi-family properties. Only those toilets using 3.5 gallons per flush or greater will be replaced. Sites will be pre-inspected, and qualified customers will receive a voucher to order District-specified toilets from a supplier under contract to the District. Customers will be required to install (at their expense) the new ULFTs within six weeks after delivery of their order. Table A-1 presents the project work plan and schedule that will be followed in each fiscal year of the program.

Table A-1 Multi-family Toilet Replacement Program Plan

Task	Description of Deliverables	Schedule	FY04 Costs	FY05 Costs	FY06 Costs
1	Marketing Identify top consumption MF accounts from pre-1992 residences Mail 100 flyers per month	Nov – Apr	$ 3,000	$ 3,000	$ 3,000
2	Pre-install Survey Perform interior water audit Replace faucet aerators Replace high-use showerheads Inventory high-use toilets	Nov – Apr	$ 5,265*	$ 5,475*	$ 5,695*
3	Toilet purchase Contract with ULFT supplier	Sep – Oct	$120,000	$120,000	$120,000
4	Toilet installation by customer Customer orders from supplier Customer install w/in 6 weeks	Dec - May	No CCWD costs	No CCWD costs	No CCWD costs
5	Post-install inspection Inspect random 10% of installations	Jan – Jun	$ 2,340	$ 2,435	$ 2,525
6	Project administration Hire & train CCWD staff Send flyer and water-use history to potential participants Schedule pre-install survey Send audit report & voucher to customer for units to replace Schedule post-install inspection Log installations into database Send follow-up materials Post-install water use analysis	Jul – Jun	$ 4,680	$ 4,865	$ 5,060

* Excludes costs associated with BMP 1 (MF audit) portion of the survey.

Table A-2 shows the quarterly expenditure projection over the course of each fiscal year.

Table A-2 Multi-family Toilet Replacement Program Cash Flow

Fiscal Year	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Total
FY04	$ 13,529	$ 27,057	$ 67,642	$ 27,057	$135,285
FY05	$ 13,578	$ 27,155	$ 67,887	$ 27,155	$135,775
FY06	$ 13,628	$ 27,256	$ 68,140	$ 27,256	$136,280

If only a portion of the project were to be funded, all tasks would still be necessary; however, the number of installations would be reduced and each task cost adjusted accordingly.

A-7 Monitoring and Evaluation

Direct program costs are tracked by the District's Finance Department through the use of project specific codes set up for labor and nonlabor costs. Thus, the portion of the pre-install survey not attributable to BMP 14 (aerator/showerhead tests and replacement) can be coded to a different project account.

Program results are monitored by individual participant and in aggregate. During the active phase of the program, customers who receive vouchers for toilet replacement but do not schedule a post-installation inspection receive follow-up phone calls as needed. Also, program mailings can be increased/decreased as needed to keep participation levels on target with the annual program goals.

All toilet replacement program results are logged in to the Water Conservation Program database. This tool provides a convenient way to track overall progress, customer response, and perform evaluations of program effectiveness and savings. Table A-3 shows an example of one report which calculates the service area distribution of toilets over a selected time period.

Table A-3 Conservation Database Report Example

BMP 14 FY02 Distribution								
Start of Period: 07-01-01				End of Period: 06-30-02				
Treated Water Service Area								
City	Concord	Clayton	Clyde	Martinez	Pacheco	Pleasant Hill	Walnut Creek	
								Total TWSA
# of ULFT distributed	314	0	0	0	0	54	40	408
Raw Water Service Area								
	Antioch	Bay Point	Martinez	Oakley	Pittsburg			Total RWSA
# of ULFT distributed	35	0	0	0	50			85
							Total toilets	493

This data will be reviewed against the program objectives (1500 installations per year) and coverage (60% of installations in TWSA and 40% of installations in RWSA). Additionally, in succeeding fiscal years, a post-installation water use analysis will be

conducted using selected pairs of retrofitted and non-retrofitted complexes to quantify a range of water use savings for comparison with the expected savings of 0.045 acre-feet/D.U./year.

Formal reporting on this program will occur as part of the biannual report to CUWCC on the status of all the BMPs. Updates to the District's Urban Water Management Plan will also contain information regarding program results.

A-8 Qualifications of the Applicant and Cooperators

The District is experienced in running conservation programs, and has funded a formal program since 1989. CCWD was one of the original signatories to the CUWCC MOU in 1991 and has implemented all urban BMPs. The District continuously monitors the results of its efforts and routinely reports on progress. District staff is experienced in management of conservation programs. The project manager for this program is Ms. Kelly Warren. The overall coordination of this program with other District water conservation activities is performed by Mr. Chris Dundon. Resumes for these individuals are attached at the end of this proposal (see Attachment 1).

There are also external cooperators who are necessary for the successful conduct of the program. First, there are the District's municipal customers who will provide specific customer information appropriate to the marketing and savings assessment activities. Next, use of the District's competitive selection procedures will determine a qualified supplier for the toilets. Finally, the customer's ability to control the hiring of the plumbing contractor to do their installation contributes to achieving desired results.

A-9 Innovation

Numerous toilet replacement programs have been implemented by many water agencies over the past ten years. The **Targeted Multi-Family Toilet Replacement Program** is very innovative because it incorporates features that improve savings sustainability and maximize cost effectiveness. These features have broad application for similar programs at other utilities.

<u>Marketing</u>

The program will be marketed directly to the customer sector with the highest potential savings. A mail campaign directed to the oldest multi-family complexes with high per dwelling water use generates a good response rate and ensures that projects with solid savings potential are undertaken. This customer sector is usually the least likely to replace all of their toilets due to the cost involved. By marketing to this type of customer, the program will reduce the incidence of program "free riders."

<u>Product Specification</u>

The District will specify the toilet(s) to be used in the program. Customers will be given vouchers for specific model(s) of toilet, thus ensuring that only high quality models with a proven track record are used in the program. The technical basis for the specified toilets is drawn from two recent studies ("Ultra-Low-Flush Toilets Customer Satisfaction Survey," Metropolitan Water District of Southern California, December 1999, and "Water Closet Performance Testing," National Association of Home Builders Research

Center for Seattle Public Utilities and East Bay Municipal Utility District, September 2002).

Purchase Power
The program has been designed to eliminate the middleman. The District will purchase toilets and associated parts (including seat, wax ring, and bolts) directly from a wholesale plumbing supplier. The wholesaler will provide, store, and deliver the toilets for a given unit price. This will allow the District to purchase high quality toilets at a considerable discount compared to the retail cost.

Customer Buy-In
The customer is asked to cost-share by paying for the installation. This gives the customer quality control with respect to work done on their property. This also reflects the fact that there is payback to the customer in the form of lower quantity charges for water and sewer service, and fewer maintenance problems with a brand new fixture.

In-house Program Administration
The program is administered entirely by existing District staff. The program fits well in the off-season for landscape audits, so trained staff can be productive year-round. Post-program savings analysis can also be performed in-house, using the technical expertise available from the District's Planning Department.

A-10 Agency Authority

1. The applicant (official signing A-2, Application Signature Page) has the legal authority to submit an application and to enter into a funding contract with the State, as documented by CCWD Board Resolution No. 01-07 (see Attachment 2).

2. CCWD was formed as a legal entity in 1936 and is authorized to operate a public water supply system.

3. CCWD is not required to hold an election before entering into a funding contract with the State.

4. The funding agreement between CCWD and the State is not subject to review and/or approval by other government agencies.

5. There is no pending litigation that may impact the financial condition of CCWD, the operation of its water facilities, or its ability to complete the proposed project.

A-11 Operations and Maintenance
(Required for construction projects only, including meter installations)

This part has been omitted as the program does not involve a construction project.

Application Part B — Engineering and Hydrologic Feasibility

(Application Part B required for construction projects only, including meter installations)

This part has been omitted as the program does not involve a construction project.

B-1 Certification Statement

B-2 Project Reports and Previous Studies

B-3 Preliminary Project Plans and Specifications

B-4 Construction Inspection Plan

Application Part C — Plan for Completion of Environmental Documentation and Permitting Requirements

C-1 California Environmental Quality Act and National Environmental Policy Act

The toilet replacement program does not meet the definition of a "project" under CEQA because it "will not result in a direct or reasonably foreseeable indirect physical change in the environment" (per CEQA Guidelines, sections 15060(c) and 15378). Additionally, the program qualifies as categorically exempt as a minor change to existing facilities (per CEQA section 15301), which specifically exempts minor changes to interior plumbing.

The project has no components within the jurisdiction of federal environmental laws. Therefore, NEPA requirements do not apply to the project.

C-2 Permits, Easements, Licenses, Acquisitions, and Certifications

Applicable plumbing codes within the program area allow replacement of an existing toilet without a permit.

C-3 Local Land Use Plans

The Contra Costa County General Plan has policies regarding water conservation in general, but not plumbing retrofits specifically.

C-4 Applicable Legal Requirements

The pre- and post-installation inspections are conducted in conformance with the federal, state and local laws, statutes, regulations, and ordinances governing tenants' rights.

Application Part D — Need for Project and Community Involvement

D-1 Need for the Project

The District's comprehensive resource management plan is known as the Future Water Supply Study (adopted by the CCWD Board in August 1996). Analysis of future customer demands against available supplies showed that new supply sources (and facilities suitable for the expanded capacity) are required over the 50-year planning horizon. The preferred resource alternative identified water transfers as the primary way to obtain the additional supply requirements. Programs which would delay the need for the new supply and/or reduce demand on the supply were analyzed for economic and non-economic benefits. This analysis was performed on conservation programs based on the MOU BMPs and showed toilet replacement programs to be beneficial and cost-effective in the CCWD service area.

The Targeted Multi-Family Toilet Replacement Program will achieve sustainable savings that the District relies on to meet its future water supply. If savings from toilet replacements are not in place sufficiently in advance of the need for the next increment of supply (estimated to occur around 2008), increased capital investments will be required. A portion of infrastructure and environmental impacts in the service area associated with new supply may subsequently prove to be unnecessary as savings continue to build over time as a result of the natural replacement rate of older fixtures. Relying on the natural replacement rate has other negative effects as well, as the consumer may select toilets of poor quality, resulting in less sustainable savings.

Additionally, without an intensified program, customers will not have an incentive to replace all high flow toilets in their complex simultaneously. Under the current program, customers may elect to replace only a portion of their toilets. Thus, the savings from the replacement program will accrue more slowly and potentially cause the overestimation of new supply facilities.

The program has a significant ability to support CALFED objectives for ecosystem restoration, water quality, and water supply reliability as the District's existing and future sources of supply involve diversion from the Delta. Two key CALFED program elements are directly addressed by this program. The water management program element expressly identifies conservation as one of its goals. The water use efficiency program element stresses "real water" conservation and the ability to increase in-stream flows for ecosystem health. Generating savings from existing customers satisfies the "real water" test because the toilets are permanent fixtures with future replacements guaranteed to be water conserving due to existing regulations. Ecosystem health is enhanced by reduction in Delta diversions on a year-round basis, which preserves in-stream flows during critical periods. Achieving these beneficial impacts concurrent with the CALFED planning process makes for better design of proposed CALFED projects where CCWD supply needs must be quantified.

D-2 Outreach, Community Involvement, Support, Opposition

The program has a broad base of support – from customers, local community service organizations, and environmental groups. The five municipal raw water customers will be actively involved with identifying the best candidates for retrofit within their retail service area. The largest city within the treated water service area, Concord, has volunteered to actively encourage owners of complexes housing low-income residents to participate in the program. Letters of support from CCWD municipal customers, the City of Concord, and environmental groups are included in this proposal (see Attachment 3). There is no known opposition to the program.

The CCWD service area is adjacent to the East Bay Municipal Utility District (EBMUD) service area to the west and southwest, and the City of Brentwood service area to the southeast. General regional publicity (such as newspaper articles) will note the availability of similar programs within these jurisdictions.

Application Part E — Water Use Efficiency Improvements and Other Benefits

E-1 Water Use Efficiency Improvements

The Targeted MF Toilet Replacement Program will result in 3,384 acre-feet of water savings. This is an annual savings of over 12,251 gallons per toilet (see table F-1). Replacement of older toilets (3.5, 5.0 and 7.0 gallons per flush) with ULFTs (1.6 gallons per flush) improves water use efficiency through demand reduction. Consequently, the same amount of customers can be served with less treated water. The unused demand will remain in the Delta ecosystem, can be used to offset the need for future supplies, and increase the reliability of existing supplies.

E-2 Other Project Benefits

In addition to the direct benefits CCWD will receive from implementing the program, other parties also benefit. Municipal customers (retail water agencies) will realize variable cost savings from reduced customer demands within their treated water service areas. The local sanitary districts including Central Contra Costa Sanitary District and Delta Diablo Sanitary District will realize variable cost savings from reduced demand. The customers receive a direct benefit from reduced volume charges for water and wastewater service. They also gain from reduced maintenance costs by replacing older fixtures with new ones.

The program has a significant ability to support CALFED objectives for ecosystem restoration, water quality, and water supply reliability as the District's existing and future sources of supply involve diversion from the Delta. Two key CALFED program elements are directly addressed by this program. The water management program element expressly identifies conservation as one of its goals. The water use efficiency program element stresses "real water" conservation and the ability to increase in-stream flows for ecosystem health. Generating savings from existing customers satisfies the "real water" test, and the corresponding reduction in Delta diversion on a year-round basis preserves in-stream flows during critical periods.

Application Part F – Economic Justification: Benefits to Costs

F-1 Net Water Savings

This program creates a net water savings by reducing water losses that are currently going to an "unusable" destination from an already-developed primary water source or sources. In the CCWD service area, reducing existing customer demand reduces losses to a saline water body (San Francisco Bay) through surface flows (via wastewater treatment plant discharge).

The expected volume of water to be saved by the program is 3384 acre-feet over 20 years. Table F-1 summarizes the calculation of the savings.

Table F-1 Multi-family Toilet Replacement Program Savings

Item	Quantity	Basis
Annual Demolition Rate	0.5 %	CUWCC MOU Exhibit 6
Annual Housing Turnover	5.3 %	1990-95 CC county avg.
Annual Toilet Replacement	4.0 %	CUWCC MOU Exhibit 6
Total Dwelling Units	29,348 d.u.	TWSA accounts (9/8/98)
Pre-1980 Dwelling Units	14,808 d.u.	TWSA account data
Post-1980 Dwelling Units	14,540 d.u.	Calculated by difference
Avg. Persons per D.U.	2.3 persons/d.u.	1990 Census data
Avg. Toilets per D.U.	1.2 toilets/d.u.	CUWCC MOU Exhibit 6
Daily Savings per D.U.	40.25 gpd/d.u.	CUWCC MOU Exhibit 6
Daily Savings per D.U.	0.000123528 AF/d.u./day	325,851 gal/AF
Annual Savings per D.U.	0.04508755 AF/d.u./yr	
Annual Savings per Toilet	0.0376 AF/toilet/yr	
Total Program Replacements	4500	1500 per year over 3 years
Total Program Savings	3384 acre-feet	CUWCC MOU Exhibit 6 Low end of toilet life range (20 years)

F-2 Project Budget and Budget Justification

Although implementation of BMP 14 is part of CCWD's ongoing future water supply implementation program, this specific grant request is not for replacement of existing funding for an ongoing program. This grant will support an intensified multi-family toilet replacement program at a point in time sufficient to realize water savings before investments in capital facilities or additional water supplies are quantified by customer demand patterns. Achieving an accelerated replacement rate among the customer sector with the greatest potential for savings (older, multi-family residences) is beneficial in maximizing the potential avoided costs.

Table F-2 summarizes the proposed program budget over the project life.

Table F-2 Multi-family Toilet Replacement Program Budget

Budget Item	Basis	FY04	FY05	FY06
Marketing	Printing & postage @ $2 per installation	$ 3,000	$ 3,000	$ 3,000
Pre-install survey	4.5 hours per 50 unit complex @ $30/hr	$ 4,050*	$ 4,210*	$ 4,380*
Post-install inspection	2 hours per 50 unit complex @ $30/hr	$ 1,800	$ 1,870	$ 1,940
Project administration	3 hours per 50 unit complex @ $40/hr	$ 3,600	$ 3,745	$ 3,895
Payroll taxes & benefits on labor costs	Use 30% load on total labor costs	$ 2,835	$ 2,950	$ 3,065
Toilet purchase	Toilet tank & bowl, seat, & wax ring @ $80 each**	$120,000	$120,000	$120,000
TOTAL		$135,285	$135,775	$136,280
Cost per installation	Installation rate of 1500 toilets per year	$ 90.19	$ 90.52	$ 90.85

Notes: Labor costs escalated using a 4% COLA on labor.
* Excludes cost of BMP 1 (MF audit) portion of the survey.
** Based on wholesale price obtained through bulk purchase.

F-3 Economic Efficiency

The economic analysis was performed from the local (CCWD) perspective. If found to be cost-effective at this level, the impacts of including economic benefits accruing to all parties will only serve to increase the benefit-to-cost ratio. As discussed in Part E-2, direct economic benefits will result for CCWD, RWSA municipal customers, service area sanitary districts, and program participants. Indirect economic benefits accrue to CALFED project planning processes.

Analysis assumptions

The following assumptions have been used in determining the benefits and costs for the proposed project:

- **Period of analysis.** The program is a capital outlay project involving the purchase and installation of ultra-low flush toilets with a conservatively estimated life of 20 years.
- **Inflation and escalation.** For ease of analysis, CCWD assumes zero future inflation and escalation of avoided costs.
- **Discount rate.** Because benefits and costs of projects are evaluated over a period of time based on the life of the project, they must be discounted to reflect the value of money over time (a dollar received today is worth more than one received in the future). A 6 percent discount rate is used for consistency with DWR guidelines.

- **Dollar value base year.** All benefits and costs are expressed in current year dollars (FY03).
- **Multiple-funded projects.** The economic analysis is conducted for the entire project, regardless of funding sources. All project costs (capital and O&M) are included in the economic analysis.

Project costs (see Tables 1, 2, and 3). Project costs usually include capital (construction) and annual operation and maintenance (O&M) costs. The economic analysis is being performed from the utility perspective, which includes marketing, materials, labor, administration, and overhead. All costs required to achieve project benefits are included in the economic evaluation. The project extends over three fiscal years, so costs are presented on a fiscal year basis.

Project benefits (see Table 4). The value of the project benefits is calculated based on the total avoided costs resulting from the volume of water saved over the toilet life. The water saved in any given year is associated with the last increment of supply to be utilized (usually the most costly source). In CCWD's case, the sole source of supply is the Central Valley Project (CVP) water over the first 5 years of project operation (2004 through 2008), and a mixture of CVP water and transfer water thereafter. Using a volume-weighted approach, 20 percent of the net water savings will occur in the first 5 years due to the 3-year phasing of toilet installation. The remaining 80 percent of the net water savings occurs during the period when the more costly transfer water is available. Thus, the avoided costs are calculated in this proportion between current supply source (CVP) and future supply source (transfer).

- **Avoided Cost of Current Supply Source** (see Table 4a). The avoided costs of the existing source of supply are based on current variable (quantity dependent) costs for the Central Valley Project water.
- **Alternative Cost of Future Supply Sources** (see Table 4b). The costs CCWD would incur if an alternative supply project is implemented instead of the proposed project are associated with the variable (quantity dependent) costs of utilizing transfer water. This option is based on the preferred resource alternative in the Future Water Supply Study (adopted by the CCWD Board in August 1996). This future supply source would need to be available by approximately 2008 to avoid a supply shortfall.
- **Water Supply Vendibility** (Table 4c). This is $0, as no water sale is being considered as a result of this project.

Sensitivity analysis. The economic analysis was tested for sensitivity regarding the assumption of service area distribution. Table F-3 shows that the program is cost-effective over the expected variablity of customer response.

Table F-3 Sensitivity Analysis

Service Area Installation Distribution	Benefit/Cost Ratio
50% TWSA, 50% RWSA	1.2
60% TWSA, 40% RWSA	1.3
75% TWSA, 25% RWSA	1.4

Appendix – Benefit/Cost Analysis Tables

Table 1 Multi-family Toilet Replacement Program Capital Costs

Budget Item	Basis	FY04	FY05	FY06
Marketing	Printing & postage @ $2 per installation	$ 3,000	$ 3,000	$ 3,000
Pre-install survey	4.5 hours per 50 unit complex @ $30/hr	$ 4,050	$ 4,210	$ 4,380
Post-install inspection	2 hours per 50 unit complex @ $30/hr	$ 1,800	$ 1,870	$ 1,940
Project administration	3 hours per 50 unit complex @ $40/hr	$ 3,600	$ 3,745	$ 3,895
Payroll taxes & benefits on labor costs	Use 30% load on total labor costs	$ 2,835	$ 2,950	$ 3,065
Toilet purchase	Toilet seat, wax ring, & bowl @ $80 each	$120,000	$120,000	$120,000
TOTAL		$135,285	$135,775	$136,280
Capital Recovery Factor	At 6% discount rate over a 20-year project life	0.0872	0.0872	0.0872
Annualized Capital Costs		$ 11,797	$ 11,840	$ 11,884

Notes: Based on an installation rate of 1500 toilets per year and 4% COLA on labor.

Table 2 Annual Operations and Maintenance Costs

Administration ***(a)***	**Operations** ***(b)***	**Maintenance** ***(c)***	**Other** ***(d)***	**Total** ***(e)***
$ 0	$ 0	$ 0	$ 0	$ 0

Notes: All O&M costs of the installed ULFTs are the responsibility of the customer.

Table 3 Total Annual Costs

Annual Capital Costs (1) ***(a)***	**Annual O&M Costs (2)** ***(b)***	**Total Annual Costs** ***(c)*** ***(a+b)***
$ 35,521	$ 0	$ 35,521

(1) From Table 1 (FY04 + FY05 + FY06)
(2) From Table 2

Table 4 Water Supply Benefits

Net water savings (acre-feet/year) ____**169.2 (from Table F-1)**

4a. Avoided Costs of Current Supply Sources (20% of net water savings)

Variable Cost Components	Variable TWSA Costs ($/AF)	Variable RWSA Costs ($/AF)	Annual Avoided TWSA Costs ($)	Annual Avoided RWSA Costs ($)	Total Annual Avoided Costs ($)
(a)	*(b)*	*(c)*	*(d)* *(b x 20.30 AFY)*	*(e)* *(c x 13.54 AFY)*	*(f)* *(d + e)*
Central Valley Project Supply	$ 60	$ 60			
Raw Water Pumping, O&M	$ 31	$ 31			
Treatment O&M	$ 130				
Treated Water Pumping, O&M	$ 69				
TOTAL	$ 290	$ 91	$ 5,887	$ 1,232	$ 7,119

Note: Costs are allocated assuming 60% of installations in TWSA and 40% of installations in RWSA.

4b. Alternative Costs of Future Supply Sources (80% of net water savings)

Variable Cost Components	Variable TWSA Costs ($/AF)	Variable RWSA Costs ($/AF)	Annual Avoided TWSA Costs ($)	Annual Avoided RWSA Costs ($)	Total Annual Avoided Costs ($)
(a)	*(b)*	*(c)*	*(d)* *(b x 81.22 AFY)*	*(e)* *(c x 54.14 AFY)*	*(f)* *(d + e)*
Transfer Supply	$ 150	$ 150			
Raw Water Pumping, O&M	$ 31	$ 31			
Treatment O&M	$ 130				
Treated Water Pumping, O&M	$ 69				
TOTAL	$ 380	$ 181	$30,864	$ 9,799	$40,663

Note: Costs are allocated assumiing 60% of installations in TWSA and 40% of installations in RWSA.

4c. Water Supplier Revenue (Vendibility)

Parties Purchasing Project Supplies *(a)*	Amount of Water to be Sold *(b)*	Selling Price ($/AF) *(c)*	Expected Frequency of Sales (%) (1) *(d)*	Expected Selling Price ($/AF) *(e) (c x d)*	"Option" Fee ($/AF) (2) *(f)*	Total Selling Price ($/AF) *(g) (e + f)*	Annual Expected Water Sale Revenue ($) *(h) (b x g)*
Total							

(1) During the analysis period, what percentage of years are water sales expected to occur? For example, if water will only be sold half of the years, enter 50% (0.5).
(2) "Option" fees are paid by a contracting agency to a selling agency to maintain the right of the contracting agency to buy water whenever needed. Although the water may not be purchased every year, the fee is usually paid every year.

4d: Total Water Supply Benefits

(a) Annual Avoided Cost of Current Supply Sources ($) from 4a, column (*f*)	$ 7,119
(b) Annual Avoided Cost of Alternative Future Supply Sources ($) from 4b, column (*f*)	$ 40,663
(c) Annual Expected Water Sale Revenue ($) from 4c, column (*h*)	$ 0
(d) Total Annual Water Supply Benefits ($) (a + b + c)	$ 47,782

Table 5 Benefit/Cost Ratio

Project Benefits ($) (1)	**$47,782**
Project Costs ($) (2)	**$35,521**
Benefit/Cost Ratio	**1.3**

(1) From Tables 4d, row (d): Total Annual Water Supply Benefits
(2) From Table 3, column (*c)* : Total Annual Costs

Attachments

Attachment 1: Resumes

Attachment 2: CCWD Board Resolution No. 01-07

Attachment 3: Letters in Support of the Program

Attachment 1

Kelly I. Warren

Present Position

Water Conservation Specialist – Contra Costa Water District
Administer the CCWD residential water conservation program, which includes the following duties:

- Market, plan, coordinate and implement Residential Programs
- Prepare flyers, newspaper advertisements, pamphlets and letters
- Conduct Single Family interior and exterior surveys
- Conduct Multi-Family interior surveys
- Project Manager for Ultra Low Flow Toilet Rebate program
- Project Manager for Ultra Low Flow Toilet Multi-Family distribution
- Project Manager for High Efficiency Washing Machine Rebate Program
- Provide supervision to permanent and temporary Water Conservation Workers
- Compiled and produced procedure manual for Single Family and Multi-Family Surveys
- Project Manager for the Water Conservation Access database
- Maintain Water Conservation Access database
- Plan, prepare, setup, and maintain exhibits/booths at local community events
- Manage quality customer service for residential customers
- CUWCC Residential Committee member

Work Experience

2000 – Present	*Water Conservation Specialist* Contra Costa Water District, Concord, California
1997 – 2000	*Staff Assistant* City of Fresno, Water Conservation Program, Fresno, California
1995 – 1997	*Senior Administrative Clerk* City of Fresno, Building & Safety Engineering Section, Fresno, California
1991 – 1995	*Administrative Clerk II* City of Fresno, Water Conservation Program, Fresno, California

Computer Skills

Microsoft Office Programs: Word, Works, Access, Excel, Power Point, Outlook Express
Corel Office Programs: Word Perfect, Quattro Pro, Presentations
Photo House, Explorer, Netscape

Awards Received

- Employee of the Quarter for the Division and Department, October – December 1995
- Recognition of Team Work Award, 1997 and 1998

Attachment 1

Christopher P. Dundon

Present Position

Water Conservation Supervisor- Contra Costa Water District

In charge of managing the District-wide conservation program including:

- Residential Survey Program
- Commercial Survey Program
- Large Landscape Survey Program
- Conservation Incentive Program including: residential and commercial ULFT rebates, ULFT distribution, high efficiency washer rebates, pre-rinse spray nozzle replacements, and irrigation equipment incentives
- Conservation Education

Prepare Conservation Budget

Prepare Annual USBR Report and CUWCC BMP Report

Represent CCWD on the CUWCC Steering Committee and on the CalFed WUE Public Advisory Committee

Work Experience

1999 – Present	*Water Conservation Supervisor* Contra Costa Water District, Concord, California
1991 – 1999	*Water Conservation Specialist* Contra Costa Water District, Concord, California
1988 – 1991	*Landscape Architect* Carducci Associates, San Francisco, CA

Education and Professional Registration

- B.S. Landscape Architecture, 1987, University of California at Davis
- Licensed California Landscape Architect
- Certified Water Auditor, Irrigation Association
- Certified Conservation Practitioner, American Water Works Association

Presentations

- "Efficient Irrigation Scheduling," presented at the Northern California Turf and Landscape Council Exposition, 1999.
- "Landscape Area Measurement Methods," presented at the Conserve '99 Conference, 1999.

Professional Organization Memberships

Member, Steering Committee for California Water Conservation Council (CUWC)
Member, Irrigation Association (IA)
Member, California Landscape Contractor Association (CLCA)
Member, Northern California Turf and Landscape Council (NCTLC)

Attachment 2

RESOLUTION NO. 01-07

RESOLUTION AUTHORIZING THE GENERAL MANAGER TO SUBMIT PROJECT PROPOSALS FOR GRANT AND/OR LOAN FUNDING

WHEREAS, various funding agencies have been delegated the responsibility for the administration of grant and/or loan programs and have established procedures, in compliance with state and/or federal regulations, governing application by Cities, Counties, and Special Districts for financial assistance under their programs; and,

WHEREAS, various funding agencies responsible for the administration of grant and/or loan programs require a Resolution from the governing body of the applicant which authorizes submittal of a grant application and delegates authority to a designated party empowered to act on behalf of the applicant;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Contra Costa Water District that the General Manager or his designee is hereby authorized and directed to:

1. investigate opportunities for grant and/or loan funding of proposed projects consistent with the purposes of the District;

2. determine that such funding will not present a conflict of interest for the Board of Directors or any of its members;

3. execute and submit, on behalf of the Contra Costa Water District, all applications and supporting documents required to apply for such grant and/or loan finding, and conduct all negotiations toward obtaining such funding;

AND BE IT FURTHER RESOLVED, that the Board of Directors of Contra Costa Water District hereby:

1. certifies that it has been determined that such funding will not present a conflict of interest for the Board or any of its members;
2. approves the submission of applications and project proposals for grant and/or loan funds to various funding agencies within the parameters set forth above;

* * * * * * * *

The foregoing Resolution was duly and regularly adopted at a meeting held on the 7th day of March 2001, by the Board of Directors of the Contra Costa Water District by the following vote:

AYES: Elcenko, Anello, Boatmun, Campbell, and Pretti

NOES: None

ABSENT: None

James Pretti, President

ATTEST:

Dianne R. Aicardi
District Secretary

Attachment 3

Letters of Support